

CALIFORNIA PUBLIC UTILITIES COMMISSION  
Water Division

ADJUSTING AND ESTIMATING  
OPERATING EXPENSES  
OF WATER UTILITIES  
(Exclusive of Taxes and Depreciation)

**Standard Practice No. U-26**

**SAN FRANCISCO, CALIFORNIA**  
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## MEMORANDUM

This standard guide has been prepared by members of the Results of Operation Section, Hydraulic Branch of the Commission's Utilities Division staff, under authorization of Work Order No. S-1699. Other engineers from the Commission's staff and elsewhere have rendered assistance through descriptions of their estimating techniques and by making available their work papers.

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## **CHAPTER 1**

### **PURPOSE AND SCOPE**

#### **A - PURPOSE OF THIS GUIDE**

1. This guide for adjusting and estimating operating expenses<sup>1</sup> of water utilities, covers certain methods and the principles involved. This guide primarily is intended as an aid for engineers who have had limited actual experience in determination of water utility operating expenses. Also, it should serve to promote uniformity of treatment and practicable thoroughness in the development of staff expense estimates.
2. The basic objective of making estimates of operating expenses is to develop required components for the expense and related portions of the staff's estimated summary of earnings. Dependable records, operational procedures, available reference data, together with logic in assumptions and reasonableness and accuracy of methods used and computations made, will give best results. Proper balance should be achieved between estimating expenses and evaluating the overall quality of service provided by the utility.

#### **B - SCOPE OF THIS GUIDE**

3. This guide covers the assembly of data, sequence of work, consideration of various normalizing adjustments, identification of trends and evaluation of such other factors as purchased power and water costs, with a view to final presentation of results in a formal hearing. In addition, it covers certain fundamental regulatory principles established by the California Public Utilities Commission and basic engineering economy considerations.

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<sup>1</sup> Exclusive of taxes and depreciation.

## **C - OTHER RELATED STUDIES**

4. Standard Practices U-2 and U-3-W, with attachments, are the basic guides for the preparation of results of operation reports related to water utility proceedings. A staff publication entitled "A Guide for Determining Reasonable Amounts of Expensed Payroll for Small Water Utilities" was issued on January 31, 1966, under Work Order No. H-93.

## **D - PRACTICAL APPLICATION**

5. Frequently, because of the small size of a utility, the scarcity or inaccuracy of the basic data, the short term of utility operation, or availability of staff time, the detailed treatment described here is not possible or warranted. In actual practice, owing to the individual discretion of the engineer concerned, the method may vary from simple judgment for estimated amounts for each expense component to extensive and detailed computations. In any event, the basic principle and methods mentioned here should be of help in testing the reasonableness of the final results arrived at by any method or procedure.

6. Based upon Commission decisions and concepts of engineering economy, the following basic factors should be reflected in the estimates of expenses:

- a. Water system operation and construction for the near future (2-3 years) and the effects of such future plant operation and facilities.
- b. Trends of past experience with due weight given to present conditions and latest known wage and price levels.
- c. Unusual expenses and those including recent charges for deferred maintenance adjusted to reasonable average levels.
- d. Elimination of nonutility, and adjustment for nonrecurring items of expense.
- e. Judgment based upon fact, field observations and personal experience.

## **CHAPTER 2**

### **BASIC DATA**

#### **A - GENERAL**

1. The engineer to whom a rate increase application or other formal proceeding is assigned should acquaint himself with the utility and its history. Previous rate and certificate proceedings, formal complaints or investigations, and related decisions, together with the current application and exhibits, give a brief history and over-all picture of the utility. The present operations, however, may represent changes of recent origin; therefore, the detailed staff study is made only after receipt of the company's work papers and replies to data requests in the pending proceeding. An on-the-site field investigation will allow the engineer to better evaluate the data.

#### **B - COMMISSION RECORDS**

2. A study of Commission historical records should give an idea of the methods of the particular utility's operation and the problems likely to be encountered during the staff investigation. Some of the historical records available to the engineer are listed below:

- a. Formal files of previous rate or certificate proceedings, Commission investigations or formal complaint cases and the opinions and orders of the Commission.
- b. Transcripts of rate or certificate proceedings, Commission investigations or formal compliant cases.
- c. Annual reports filed with the Commission.

d. Hydraulic Branch files.

- (1) Latest staff results of operation or other investigation reports.
- (2) Staff workpapers of formal or other proceedings (so-called "Hydraulic" files).
- (3) Tariff files (current and superseded).
- (4) Informal complaints filed with Customer Service Representative.

e. Files of other Utilities Division Branches.

- (1) Gas and Electric tariff files (current and superseded).
- (2) Monthly operating reports filed by some utilities (General Engineering Branch, Statistics Unit).

3. All the above material can be taken to the engineer's desk for inspection and study. The Gas and Electric tariff files may be needed for power cost analysis if the utility is served by regulated gas or electric companies.

### **C - EXAMINATION OF RECORDS**

4. The Finance and Accounts Division may be able to provide pertinent recorded information by separating Class A, B and C water utility operating expense accounts into material, labor and other functions, such as provided by the Uniform System of Accounts for Class D water utilities. The extent of the financial examiner's work should be ascertained as soon as possible, and the engineer should indicate any special accounting matters he would like the financial examiner to analyze.

5. It is important to obtain as soon as possible any accounting adjustments or corrections which the financial examiner may recommend. Normally, all his work will be completed before the test year's ratemaking expenses are estimated by the engineer. Occasional conferences between

the assigned financial examiner and the engineer are valuable in formulating guidelines of relevancy and materiality for necessary accounting data.

## **D - FIELD INVESTIGATION**

6. A knowledge of the water system gained from prior review of Commission records will expedite the on-site inspection. An up-to-date system map should be obtained from the utility before the inspection. Any service problem areas may be ascertained through customer interviews, Commission records of informal complaints, and the engineer's own spot checks of pressure, taste, and odor, as well as by contacting the County and/or State Health Departments having jurisdiction over water quality.

7. A general knowledge of the duties of the utility employees should also be acquired during the field investigation, by direct interviews if necessary.

8. The engineer should study the utility's records concerning quality of service, such as well tests, pump tests, pressure tests, water quality analyses, customer complaints, and so on. In addition, accounting items may be further explored by the engineer during the field investigation if such need arises.

## **E - DATA REQUESTS**

9. A written data request should produce any supplemental information needed by the engineer. Additional data may be required as the investigation proceeds and should be requested as needed. The engineer should not, however, ask for nonessential information, or for any information readily available in the Commission's files or derivable from the data already on hand. A typical data request appears below.

## **TYPICAL DATA REQUEST**

1. A monthly tabulation of number of customers, quantities of water sold and revenues billed, by class of customer, for the last three calendar years and present year to date.
2. A monthly tabulation, for the same period as indicated in item 1, showing for each well, booster pump or other production unit (if combined), water produced or pumped, kWh consumption, billing demand, dollars billed and power utility schedule number. If several units are combined in one installation, include all horsepower ratings, kWh consumed and designed capacities of each unit. If billing horsepower of any installation is other than total combined load, so indicate, together with any limitations and/or possible combinations of horsepower, production and discharge heads. If pumps are other than electric, include data similar to above for fuel used.
3. For the same period covered in item 1, a separation of Ac. 704, Water Purchased, by each source and/or location of delivery point and include unit prices paid. In a similar manner, separate Ac. 744, Chemicals Purchased, by types and quantities of the various chemicals used in water treatment, together with prices paid.
4. Monthly operation and maintenance expenses for the period outlined in item 1 by major functional classifications or accounts and (for other than major utilities) monthly details, for the same period, for accounts or sub-accounts of administrative, general and miscellaneous expenses.
5. The recorded utility payroll accounts, by months, for the same three-year period and subsequent months, with portion of payroll charged to expense, to capital and to the various clearing accounts. The tabulation should also have the total monthly payroll expenditures. Show employee benefits and payroll taxes separately.
6. A listing of all utility officers, directors, and employees by months, for the same period, with position title or classification, the wage and salary



level paid at the beginning of each year, increase during that year, the amount paid at the close of the year and the total amount paid each employee during the year.

7. Itemized cost and description of nonrecurring or unusual expense items in the period outlined in item 1. Indicate any other pertinent data which will be of assistance in adjusting the recorded expenses to reflect normal expected operating conditions.

8. Summarization of annual total net uncollectible water bills actually experienced during the last three calendar years and current year, to date.

9. Latest detailed map of the system.

## **CHAPTER 3**

### **SEQUENCE OF WORK**

#### **A - PREPARATORY WORK**

1. Before actually making expense estimates, the revenue study should be completed. From the revenue study, the customer growth and usage estimates and the water production and/or purchase requirements can be ascertained after giving consideration to unaccounted-for-water arising from leakage, fire protection or other unmetered usage in a fully metered system.
2. The expenses are generally separated, for analysis, by function or by accounting classification. The use of both methods provides a cross-check. Table 3-A is an example of separation of recorded expenses by function and by accounts.

#### **B - ANALYSIS AND ESTIMATES**

3. The following sequence can be followed:
  - a. Determine cost of purchased water.
  - b. Determine cost of purchased power and/or fuel.
  - c. Determine payroll expensed.
  - d. Make estimates for other functions' expenses.
  - e. Draft the report chapter.
  - f. Have all calculations checked.
4. It is often best to first determine the estimates for the basic year to be tested. Preceding or subsequent years' adjustments or estimates can be developed by making allowances for identified trends from the basic test year. It should be noted, however, that if all known current and near future labor, material and other price levels are reflected in the basic test years' expense estimates, the only remaining trend-inducing variables are customer growth (or decline) and increasing (or decreasing) use of water per customer.

## **CHAPTER 4**

### **ADJUSTMENTS AND ESTIMATES**

1. Adjustments and other considerations that are most likely to occur in estimating operating expenses are mentioned in this chapter.

#### **A - PURCHASED WATER**

2. Some of the items to be considered in estimating the cost of purchased water are:
  - a. Water quantities allocable between normal gravity flow and pumping.
  - b. Latest price levels, or firm future levels.
  - c. Taxes assignable to water purchased or produced.
  - d. Assessments through stock ownership in mutual or other water systems.

#### **B - PURCHASED POWER**

3. Some items to be considered in estimating the cost of purchased power are:
  - a. Existing pumping units should be checked for operating efficiency. An adjustment may be made for low efficiency, with an associated allowance for pump overhaul in the appropriate account.
  - b. The kWh (or other fuel unit) per Ccf pumped should be determined for each pumping unit as well as the energy cost per Ccf, for a period of several past years.
  - c. Allow for change in discharge head and pumping water level in wells.
  - d. Allow for new methods of operation of well and booster pumps.
  - e. Allow for necessary additional pumping units, considering minimum or standby power charges, as well as cost per Ccf or kWh.
  - f. Check for more advantageous power schedules.
  - g. Adjust for latest gas or electric rates (or other fuel costs).

## **C - PAYROLL**

4. Besides the expensed payroll guide for small water utilities mentioned in Chapter 1, a comparison of payroll per customer with similar water utilities may be obtained in reports of comparative financial ratios issued annually by the Finance and Accounts Division. A tabulation of payroll adjustments normally considered is as follows:

- a. Adjust to latest wage and salary levels known for all employees.
- b. Determine if owners' or directors' salaries are reasonable, adjust if necessary.
- c. Allow for owners' time, if not charged, for a proprietorship utility.
- d. Adjust for adequate or reasonable number of employees.
- e. Allow for normal and expected overtime and part-time work.
- f. Adjust for recently adopted methods of operation.
- g. Normalize or eliminate payroll pertaining to any unusual work done, depending upon the circumstances.
- h. Capitalize construction work payroll if mingled with expenses, and coordinate with plant adjustment or estimate.
- i. Allow for appropriate growth in the utility's operations.

## **D - OTHER OPERATION AND MAINTENANCE EXPENSES**

5. The following is a list of factors considered in adjusting and estimating operation and maintenance expenses other than payroll, power and purchased water:

- a. Adjust amount of chemicals used for normal year water production.
- b. Adjust cost of chemicals to latest price known.
- c. Eliminate nonrecurring expenses (or spread over a reasonable period of years) and eliminate nonutility expenses.

- d. Analyze accounts with unusual expenses relative to other years of the study.
- e. Adjust for possible deferred or delayed maintenance charges, in conjunction with possible related depreciation expense adjustment.
- f. Allow for reasonable use of private car necessary for operation of the small proprietorship utility business.
- g. Allow for possible effect of new vehicles in reducing maintenance costs.
- h. Adjust for latest billing method and costs.
- i. Adjust for latest postage rates.
- j. Include a reasonable rental allowance for facilities and structures which are not owned by the utility. Analyze the associated services, which may include utilities and maintenance of the facilities, to determine whether or not they are included in the rental cost. Also, refer to Subject Reference R91, dated January 9, 1964, concerning possible rate base treatment of rented facilities.
- k. Check if adequate records are kept and make an allowance for any additional accounting and record keeping if necessary.
- l. Capitalize costs of construction materials and components, if mingled with maintenance expenses and if life over one year.
- m. Uncollectibles should be based upon previous recorded amounts provided the utility has shown a conscientious effort to collect all past due bills.
- n. Allow for appropriate growth in the utility's operations.

## **E - ALTERNATE METHOD**

6. An over-all check of expenses, excluding power, purchased water, and chemicals, can be made for those utilities which keep good recorded data and which are not rapidly changing because of large customer growth. In fact, this method may provide the best results for very large companies, provided some analysis is made of individual accounts. The following items should be observed:

- a. Use at least five years of recorded data.
- b. Separate operation expenses and maintenance expenses.
- c. Adjust payroll to present wage and salary levels and ascertain trends, if any.
- d. Adjust material and supplies prices to present levels and ascertain trends, if any. The use of an Engineering News Record index, the Handy Whitman index, or other appropriate indices may be helpful.
- e. Adjust for customer and/or usage growth.
  - (1) In the operation accounts, the meter reading and billing accounts generally increase directly with customer growth. Other operation accounts may increase at a rate of 50% to 60% of customer growth.
  - (2) In the maintenance accounts, additional meters, services, pumps, or footage of main, may or may not directly affect maintenance costs. The engineer will have to use his judgment and experience.
- f. Since maintenance is a fluctuating item, taking an average of past years, after appropriate adjusting, is most helpful. In the operation portion, the latest year, adjusted, is usually the most pertinent.

7. It should be noted that all adjusted and estimated operating expenses must be consistent with not only the water usage estimates

developed for revenue estimates but also with any utility plant estimates affecting maintenance or operation.

8. Other principles and practices relevant to adjusting and estimating operating expenses can be found in the staff's subject reference memoranda, particularly in the D-, L- and M- series.

## **F - ADMINISTRATIVE AND GENERAL EXPENSES**

9. The General Engineering Branch should be consulted on any complex questions concerning administrative and general accounts. For the present, the following account items should be noted:

- a. Regulatory Commission expense is usually spread over five years, unless the frequency of utility rate or other proceedings is more or less often. In making estimates, the terminology "amortized" should be avoided.
- b. Dues, donations and contributions to charitable and service organizations are generally disallowed. Dues to recognized technical organizations are generally allowed.

10. In all rate increase applications involving the major water utilities and those having multi-district or affiliated operations intra or interstate, the administrative, general and miscellaneous expenses normally are adjusted and estimated in the General Engineering Branch, since allocation or separation procedures are usually involved between and among the utilities' districts and their common general office, billing office and possibly other joint operations.

## **CHAPTER 5**

### **EXAMPLE OF OPERATING EXPENSES SECTION OF REPORT**

#### **A - OPERATING EXPENSES**

1. The following tabulation is a summary of the 1967 recorded and applicant's and staff's estimated operating expenses for 1968, segregated by function.



2. An explanation of differences between estimates shown in the preceding tabulation is given in the following comments:

- a. Purchased Water - Applicant's and staff's estimates for this item were consistent with their respective methods for estimating purchased pumping power. Applicant and staff both estimated that purchased water would meet 50 percent of total requirements and that unaccounted for water would be five percent of total supplies.
- b. Purchased Pumping Power - Applicant predicated its increased power costs on the indicated trend between 1966 and 1967. The year 1966 was an exceptionally low water sales year and pumping power costs were correspondingly low. The staff correlated its estimates for power with the water sales determined for its revenue estimates.
- c. Total Expensed Payroll - The staff has included an increase in employees' salaries authorized by applicant's Board of Directors' resolution of November 22, 1967, subsequent to the preparation of applicant's estimates.
- d. Maintenance and Operating Materials and Supplies - The amounts expended during the recorded year 1967 totaled \$15,626 as compared with \$8,497 for 1966. The difference is represented by: (1) a deferred meter repair program; (2) transmission and distribution system repairs not heretofore sustained; and (3) rewinding of pump motors. For ratemaking purposes, the staff has spread these nonrecurring amounts over an appropriate number of years. In addition, the staff has reflected the effect of normalizing abnormal amounts to be expended for known well and pump maintenance during 1968.
- e. Printing, Addressing and Postage of Customer Bills - The difference between applicant's and the staff's estimates results from the staff's inclusion of a 20 percent increase in postage rates to be effective in 1968, a fact unknown to applicant during preparation of its estimate.
- f. Transportation, Vehicle Operation and Outside Maintenance - The staff's estimate is based upon costs as adjusted by the financial examiner rather than those reported by the company for 1967.

- g. Legal and Accounting Services - Legal and accounting costs were incurred in 1967 for a special job of a nonrecurring nature. Applicant's 1968 estimate for this item disregards the special nature of a portion of total legal and accounting services in 1967 by factoring the recorded amount upward. The staff normalized the nonrecurrent portion of these costs over a five-year period.
- h. Insurance, Pensions and Employee Benefits - The year 1967 recorded includes only a partial year's costs for a newly instituted employee health insurance plan effective July 1, 1967. Both applicant's and the staff's 1968 estimates include such new costs for the full year but the staff's estimate reflects pension benefit increases (a percentage of payroll) reflecting the staff's payroll estimate.
- i. Outside Engineering and Consulting Fees - A portion of these costs in 1967 was incurred for the special project referred to in item g, above, and applicant and staff estimates were treated in a manner explained therein.
- j. Uncollectibles - The staff estimate reflects historical experience of applicant with this cost, whereas applicant rounded the 1967 recorded amount. Also, applicant estimates this cost to be directly related to gross revenues (therefore a different amount at proposed rates) while the staff estimate reflects its experience with uncollectibles sustained by many similar water utilities.
- k. Rate Case Expense - Applicant has spread its estimated cost of the current rate proceeding over three years, while the staff has normalized such cost over five years, consistent with applicant's average interval between rate proceedings.
- l. Miscellaneous Expenses - Office machine servicing, office utilities and janitorial services were estimated conjunctively by applicant and hence cannot be compared, in detail, with the staff's separate estimates. The staff's total of these items is \$1,100 less than applicant's estimate and results from an analysis of each separate cost item.